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F. CHAU & ASSOCIATES, LLC
130 WOODBURY ROAD
WOODBURY, NY 11797

EXAMINER	
MEW, KEVIN D	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/714,732	ACHARYA ET AL.	
	Examiner	Art Unit	
	Kevin Mew	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _09 March 2009_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-3,5-8 and 10-12_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-3, 5-8, 10-12_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Detailed Action

Response to Amendment

1. Applicant's Remarks/Arguments filed on 3/9/2009 have been considered. Claims 4, 9, 13 have been canceled by applicant. Claims 1-3, 5-8, 10-12 are currently pending.

2. Acknowledgement is made of the canceled claim 13 with respect to the claim objection set forth in the previous Final Office action. The claim objection to claim 13 is now withdrawn.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-3, 5, 6-8, 10 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention.

Regarding claims 1-3, 5, the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. See page 10 of In Re Bilski 88 USPQ2d 1385. The instant claims are neither positively tied to a particular machine that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process. The method steps of handling Session Initiation Protocol ("SIP") messages for voice over Internet Packet call control, as claimed in independent claim 1, are broad enough that each of the claims could be completely performed mentally or without a machine nor is any transformation apparent.

Regarding claims 6-8, 10, the claims recite “a signal-bearing medium …,” which is a nonstatutory descriptive material per se. First, a signal is a form of energy and is considered as nonstatutory natural phenomena and does not fall within any of the categories of patentable subject matter set forth in 35 U.S.C. 101. Therefore, “a signal-bearing medium” is a medium bearing signals and itself is not a process. Also, “a signal-bearing medium” has no physical structure, does not itself perform any useful, concrete, and tangible result and thus, does not fit within the definition of a machine.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 6-7, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Dyke et al. (US Publication 2004/0153497 A1) in view of Bremler-Barr et al. (US Publication 2003/0076848 A1).

Regarding claim 1, Van Dyke discloses a method for handling Session Initiation Protocol ("SIP") messages for voice over Internet Packet call control, comprising:

receiving a stream of SIP messages (receiving a stream of SIP INVITE messages with different service types, paragraphs 0021-0025);

classifying each of the SIP messages as one of at least two message types (classifying SIP INVITE messages based the message service type, paragraphs 0021-0023);

placing said SIP messages in separate queues associated to the message types (placing said SIP messages in separate application processors AP associated with the message service type, paragraph 0025);

allocating SIP call control server processing resources to each queue (allocating SIP service to each application processor AP) according to a pre-defined policy (according to the service type included in the SIP INVITE message, paragraph 0025) associated with a corresponding message type (message service type, paragraphs 0021-0023),

Van Dyke may not explicitly show the messages are leaked from at least one of the queues for enforcing a message overload protection for the associated message type.

However, Bremler-Barr discloses a Scheduler with a Rate Limiter (e.g. token leaky bucket, Fig. 3A) to dequeue packets (messages are leaked from at least one of the queues) for transmittal to node N4 according to packets of different classes, which is used for different respective classes of packets to prevent individual streams from hogging the system resources (paragraphs 0070, 0074, 0075, 0076, Fig. 3A; apparatus D of Fig. 3A comprises the scheduler that controls the rate packets dequeue from the queues according to parameters of packets of different classes).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the SIP call distribution method of Van Dyke with the teaching of Bremler-Barr in having a scheduler with a mechanism to dequeue packets (messages are leaked from at least one of the queues) for transmittal to node N4 according to packets of different

classes, which is used for different respective classes of packets to prevent individual streams from hogging the system resources such that the SIP call distribution method of Van Dyke will show the messages are leaked/dequeued from at least one of the queues for enforcing a message overload protection for the associated message type.

The motivation to do so is to control the rate at which different types of flows are allowed to communicate with a victim device such as N4.

Van Dyke may not explicitly show the step of allocating SIP call control server processing resources comprises allocating a percentage of the SIP server control server processing resources to each of the queues.

However, Bremler-Barr teaches allocating different weight of resources for different queues of packets during a point in time such that one queue/class may receive ten times more resources than another queue (paragraph 0129).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the call distribution system and method of Van Dyke with the teaching of Bremler-Barr in allocating different weight of resources for different queues of packets during a point in time such that one queue/class may receive ten time more resources than another queue so that the SIP system and method of Van Dyke will show the step of allocating SIP call control server processing resources comprises allocating a percentage of the SIP server control server processing resources to each of the queues.

The motivation to do so is to dynamically changing weights of the queues so as to control the relative traffic flow rates of the queues.

Regarding claim 2, Van Dyke discloses the method of claim 1, wherein the step of classifying the messages comprises classifying the messages as a REGISTER, INVITE (SIP INVITE message, paragraphs 0021-0025), or RE-INVITE message.

Regarding claim 6, Van Dyke discloses a signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method for handling Session Initiation Protocol ("SIP") messages for voice over Internet Packet call control, said method comprising:

receiving a stream of SIP messages (receiving a stream of SIP INVITE messages with different service types, paragraphs 0021-0025);

classifying each of the SIP messages as one of at least two message types (classifying SIP INVITE messages based the message service type, paragraphs 0021-0023);

placing said SIP messages in separate queues associated to the message types (placing said SIP messages in separate application processors AP associated with the message service type, paragraph 0025);

allocating SIP call control server processing resources to each queue (allocating SIP service to each application processor AP) according to a pre-defined policy associated with the

message types (according to the service type included in the SIP INVITE message, paragraph 0025).

Van Dyke may not explicitly show leaking the messages from at least one of the queues for enforcing a message overload protection for the associated message type.

However, Bremler-Barr discloses a Scheduler with a Rate Limiter (e.g. token leaky bucket, Fig. 3A) to dequeue packets (messages are leaked from at least one of the queues) for transmittal to node N4 according to packets of different classes, which is used for different respective classes of packets to prevent individual streams from hogging the system resources (paragraphs 0070, 0074, 0075, 0076, Fig. 3A; apparatus D of Fig. 3A comprises the scheduler that controls the rate packets dequeue from the queues according to parameters of packets of different classes).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the SIP call distribution method of Van Dyke with the teaching of Bremler-Barr in having a scheduler with a mechanism to dequeue packets (messages are leaked from at least one of the queues) for transmittal to node N4 according to packets of different classes, which is used for different respective classes of packets to prevent individual streams from hogging the system resources such that the SIP call distribution method of Van Dyke will show the messages are leaked/dequeued from at least one of the queues for enforcing a message overload protection for the associated message type.

The motivation to do so is to control the rate at which different types of flows are allowed to communicate with a victim device such as N4.

Van Dyke may not explicitly show the step of allocating SIP call control server processing resources comprises allocating a percentage of the SIP server control server processing resources to each of the queues.

However, Bremler-Barr teaches allocating different weight of resources for different queues of packets during a point in time such that one queue/class may receive ten times more resources than another queue (paragraph 0129).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the call distribution system and method of Van Dyke with the teaching of Bremler-Barr in allocating different weight of resources for different queues of packets during a point in time such that one queue/class may receive ten time more resources than another queue so that the SIP system and method of Van Dyke will show the step of allocating SIP call control server processing resources comprises allocating a percentage of the SIP server control server processing resources to each of the queues.

The motivation to do so is to dynamically changing weights of the queues so as to control the relative traffic flow rates of the queues.

Regarding claim 7, Van Dyke discloses the medium of claim 6, wherein the step of classifying each of the SIP messages comprises classifying the messages as a REGISTER (SIP INVITE message, paragraphs 0021-0025), INVITE, or RE-INVITE message.

Regarding claim 11, Van Dyke discloses a system (Fig. 2) for handling Session Initiation Protocol ("SIP") messages for voice over Internet Packet call control (paragraph 0016), comprising:

a classifier (SIP dispatcher 22, Fig. 2) for receiving a stream of SIP messages (receiving a stream of SIP INVITE messages with different service types, paragraphs 0021-0025) and classifying the messages based on at least two message types (classifying SIP INVITE messages based the message service type, paragraphs 0021-0023);

a plurality of queues associated to the message types (a plurality of application processors associated to the message service types, paragraph 0025), wherein the messages are placed in one of the plurality of queues according to a classification of the message (message information are assigned to the corresponding application processors according to a classification of the service type, paragraph 0025);

a SIP control server (SIP dispatcher 22, Fig. 2) for directing calls corresponding to the messages (dispatching corresponding to the service types of the SIP INVITE messages) and waiting to be served in the queues (waiting to be served in the application processors APs, paragraph 0025); and

a scheduler (SIP dispatcher 22, Fig. 2) for allocating SIP call control server processing resources to each queue according to a pre-defined policy (for allocating application processing resources to each application processor according to the service type defined in the SIP INVITE message, paragraph 0025).

Van Dyke may not explicitly show the messages are leaked from at least one of the queues for enforcing a message overload protection for the associated message type.

However, Bremler-Barr discloses a Scheduler with a Rate Limiter (e.g. token leaky bucket, Fig. 3A) to dequeue packets (messages are leaked from at least one of the queues) for transmittal to node N4 according to packets of different classes, which is used for different respective classes of packets to prevent individual streams from hogging the system resources (paragraphs 0070, 0074, 0075, 0076, Fig. 3A; apparatus D of Fig. 3A comprises the scheduler that controls the rate packets dequeue from the queues according to parameters of packets of different classes).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the SIP call distribution method of Van Dyke with the teaching of Bremler-Barr in having a scheduler with a mechanism to dequeue packets (messages are leaked from at least one of the queues) for transmittal to node N4 according to packets of different classes, which is used for different respective classes of packets to prevent individual streams from hogging the system resources such that the SIP call distribution method of Van Dyke will show the messages are leaked/dequeued from at least one of the queues for enforcing a message overload protection for the associated message type.

The motivation to do so is to control the rate at which different types of flows are allowed to communicate with a victim device such as N4.

Van Dyke and Bremler-Barr may not explicitly show the scheduler schedules the threads corresponding for execution by the processor according to the pre-defined policy.

However, Zolnowsky teaches comprising a plurality of threads wherein each of the plurality of threads corresponds to a respective one of the plurality of queues and a process

scheduler for selecting a thread for execution for each of the queues in the system by qualifying the queues for execution in accordance with the priority of each of the threads (col. 4, lines 4-23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the SIP call distribution method of Van Dyke with the teaching of Zolnowsky in having a process scheduler for selecting a thread for execution for each of the queues in the system by qualifying the queues for execution in accordance with the priority of each of the threads such that the SIP call distribution method of Van Dyke will comprise running a plurality of threads of the messages on a processor, wherein each thread corresponds to a respective one of the queues, wherein the allocation of SIP call control server processing resources to each queue according to the pre-defined policy further comprises scheduling the threads for execution according to a scheduling policy.

The motivation to do so is to allow a process scheduler to prevent race conditions and minimize lock contention while assuring that high-priority threads are processed/dispatched as quickly as possible.

5. Claim 3, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Dyke et al. in view of in view of Bremler-Barr et al., and in further view of Horvath et al. (US Publication 2005/0102421 A1).

Regarding claim 3, Van Dyke and Bremler-Barr disclose all the aspects of claim 2 above, except fail to explicitly show the method of claim 2, wherein the step of classifying the messages

comprises classifying a message as an emergency call message by reading the destination address of a SIP INVITE message.

However, Horvath discloses in a VoIP network using the session initiation protocol SIP, an emergency call is recognized by reading the dialed destination address (paragraphs 0002, 0037).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the call distribution system and method of Van Dyke with the teaching of Horvath in recognizing an emergency call by reading the dialed destination address in a VoIP network using SIP such that the method of handling SIP messages in Van Dyke will also comprise the step of classifying the messages comprises classifying a message as an emergency call message by reading the destination address of a SIP INVITE message.

The motivation to do so is to allow an emergency call station to be contacted.

Regarding claim 8, Van Dyke and Bremler-Barr disclose all the aspects of claim 7 above, except fail to explicitly show the medium of claim 7, wherein the step of classifying the messages comprises classifying a message as an emergency call message by reading the destination address of a SIP INVITE message.

However, Horvath discloses in a VoIP network using the session initiation protocol SIP, an emergency call is recognized by reading the dialed destination address (paragraphs 0002, 0037).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the call distribution system and method of Van Dyke with the

teaching of Horvath in recognizing an emergency call by reading the dialed destination address in a VoIP network using SIP such that the method of handling SIP messages in Van Dyke will also comprise the step of classifying the messages comprises classifying a message as an emergency call message by reading the destination address of a SIP INVITE message.

The motivation to do so is to allow an emergency call station to be contacted.

6. Claims 5, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Dyke et al. in view of Bremler-Barr et al., and in further view of D'Souza et al. (US Publication 2004/0236966 A1).

In claim 5, Van Dyke and Bremler-Barr disclose all the aspects of claim 1 above, except fail to explicitly show the method of claim 1, wherein the step of allocating the SIP call control server processing resources comprises controlling a rate at which messages from individual users are processed by a call control server, thereby preventing denial-of-service attacks on the call control server by individual servers in a packet-based VoIP infrastructure.

However, D'Souza discloses a system and method of mitigating denial of service attacks using SIP (paragraphs 0041, 0042, abstract) by dequeuing packets from a plurality of queues at different rates according to the level of trust associated to the source address of the incoming packets such that the higher the trust in the addresses the higher the rate at which the packets are dequeued from the given queue (paragraphs 0017, 0018).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the SIP resource allocation method of Van Dyke with the teaching of D'Souza in dequeuing packets from a plurality of queues at different rates according to the

level of trust associated to the source address of the incoming packets such that the resource allocation method of Van Dyke will comprise controlling a rate at which messages from individual users are processed by a call control server, thereby preventing denial-of-service attacks on the call control server by individual servers in a packet-based VoIP infrastructure.

The motivation to do so is to mitigate the effects of a packet flooding denial-of service attack and the effects of data search resource exhaustion.

In claim 10, Van Dyke and Bremler-Barr disclose all the aspects of claim 6 above, except fail to explicitly show the medium of claim 6, wherein the step of allocating the SIP call control server processing resources comprises controlling a rate at which messages from individual users are processed by a call control server, thereby preventing denial-of-service attacks on the call control server by individual servers in a packet-based VolP infrastructure.

However, D'Souza discloses a system and method of mitigating denial of service attacks using SIP (paragraphs 0041, 0042, abstract) by dequeuing packets from a plurality of queues at different rates according to the level of trust associated to the source address of the incoming packets such that the higher the trust in the addresses the higher the rate at which the packets are dequeued from the given queue (paragraphs 0017, 0018).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the SIP resource allocation method of Van Dyke with the teaching of D'Souza in dequeuing packets from a plurality of queues at different rates according to the level of trust associated to the source address of the incoming packets such that the resource allocation method of Van Dyke will comprise controlling a rate at which messages from

individual users are processed by a call control server, thereby preventing denial-of-service attacks on the call control server by individual servers in a packet-based VoIP infrastructure.

The motivation to do so is to mitigate the effects of a packet flooding denial-of service attack and the effects of data search resource exhaustion.

7. Claims 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Dyke et al. (US Publication 2004/0153497 A1) in view of Bremler-Barr et al. (US Publication 2003/0076848 A1), and in further view of Zolnowsky (USP 5,826,081).

Regarding claim 12, Van Dyke and Bremler-Barr may not explicitly show the method of claim 1, further comprising running a plurality of threads of the messages on a processor, wherein each thread corresponds to a respective one of the queues, wherein the allocation of SIP call control server processing resources to each queue according to the pre-defined policy further comprises scheduling the threads for execution according to a scheduling policy.

However, Zolnowsky teaches a process scheduler for selecting a thread for execution for each of the queues in the system by qualifying the queues for execution in accordance with the priority of each of the threads (col. 4, lines 4-23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the SIP call distribution method of Van Dyke with the teaching of Zolnowsky in having a process scheduler for selecting a thread for execution for each of the queues in the system by qualifying the queues for execution in accordance with the priority of each of the threads such that the SIP call distribution method of Van Dyke will comprise running

a plurality of threads of the messages on a processor, wherein each thread corresponds to a respective one of the queues, wherein the allocation of SIP call control server processing resources to each queue according to the pre-defined policy further comprises scheduling the threads for execution according to a scheduling policy.

The motivation to do so is to allow a process scheduler to prevent race conditions and minimize lock contention while assuring that high-priority threads are processed/dispatched as quickly as possible.

Response to Arguments

8. Applicant's arguments filed on 3/9/2009 have been fully considered but are moot in view of the new ground(s) of rejection.

In response to applicant's argument on page 2, last paragraph, page 3, lines 1-14 of the Remarks that Bremler-Barr does not teach or suggest "leaking the messages from at least one of the queues for enforcing a message overload protection for the associated message type" nor "a plurality of queues associated to the message types, wherein the messages are placed in one of the plurality of queues according to the classification of the message and leaked from at least one of the queues for enforcing a message overload protection for the associated message type," it is noted that a new ground of rejection is made based on paragraphs 0070, 0074, 0075, 0076, Fig. 3A of Bremler-Barr instead of paragraphs 0117, 0118 of Bremler-Barr, and applicant's attention is now directed to paragraphs 0070, 0074, 0075, 0076, Fig. 3A of Bremler-Barr, which shows the dequeuing/leaking process of different classes of packets by the scheduler and the token leaky-bucket rate limiter after the packets have entered the apparatus D/system.

Bremler-Barr teaches a Scheduler with a Rate Limiter (e.g. token leaky bucket, Fig. 3A) to dequeue packets (messages are leaked from at least one of the queues) for transmittal to node N4 according to packets of different classes, which is used for different respective classes of packets to prevent individual streams from hogging the system resources (paragraphs 0070, 0074, 0075, 0076, Fig. 3A; apparatus D of Fig. 3A comprises the scheduler that controls the rate packets dequeue from the queues according to parameters of packets of different classes) (see 35 U.S.C. 103(a) rejection made to claim 1 above).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. M./
Examiner, Art Unit 2416

/Chi H Pham/
Supervisory Patent Examiner, Art Unit 2416
5/11/09